A technical manual from the experts in *Business-Critical Continuity™*

NetSure™ RDB Series

Installation and User Manual — Plug-n-Play 48V Rack Distribution

Section 6041 (Issue AG, January 21, 2013)

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REVISION RECORD

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WARNING

Please read and follow all safety information!

Failure to observe the safety information listed below may result in electric shock, fire hazards, or serious injury.

Please safeguard this Installation and User Manual.

Intended Use

The NetSure™ RDB Rack PDU (Power Distribution Unit) is designed to deliver power to information technology and telecommunication equipment.

Operate the Rack PDU in an indoor environment only within an ambient temperature range and a relative humidity range as listed in **3.2 - Environmental Characteristics**. Install the Rack PDU in a clean environment, free of conductive contaminants, moisture, flammable liquids, gases and corrosive substances.

- Do not use the Rack PDU in moist environments. If the Rack PDU is exposed to moisture, immediately disconnect the Rack PDU from DC input power by opening the circuit breaker or removing the fuse or breaker supplying DC input to the Rack PDU. Send the Rack PDU to the manufacturer for inspection.
- Do not use the Rack PDU for household applications.

Installation and Operation

Improper installation and operation may cause overheating and lead to increased fire hazard. It may also destroy the device and damage other connected systems.

- Installation and start-up must be performed by a qualified service engineer.
- Make sure that the total input current of the connected systems does not exceed the current rating specified on the rating plate of the Rack PDU.

Electrical Safety

Damaged Rack PDUs or connected cables increase the risk of electric shock or smoldering fire.

- Check the unit for external signs of damage prior to start-up operation! Do not operate the device if you detect any damage or other deficiencies.
- Only use the supplied DC input power cable.

Personal Safety

Careless handling increases the risk of electric shock.

- Never touch the outlets or the Rack PDU with wet or moist hands.

Service

Repairs should only be performed by qualified service technicians.

Unauthorized changes, modifications, or repairs of the device are performed at the owner's risk and will void all warranty claims.

- Do not open the Rack PDU.
- Please contact the nearest customer service center in case of malfunction! Damage and defects must be repaired immediately.
- Always disconnect the unit from power before troubleshooting.

1.0 INSTALLATION

The NetSure™ RDB Rack PDUs (Power Distribution Units) are designed to be installed on the left and/or right rear frames of IT racks. They can be mounted directly to the rack or use Rack PDU Mounting Kit P/N 547665. See **3.4 - Dimensions** for hole dimensions.

1.1 Shipment Inspection

Unpack the shipping container, inspect all items for damage and verify that the shipment is complete and undamaged. Report any damage to your local Emerson representative and the carrier.

1.2 Installing the Rack PDU

WARNING

Ensure proper grounding.

The Rack PDU's "Ground Lead Bracket" must be ground bonded to the mounting bracket (if used) or rack frame. The mounting bracket (if used) must be ground bonded to the rack frame. The rack frame must be ground bonded to your site ground. This is typically accomplished through the use of paint free areas and/or grounding washers used when mounting the components.

1.2.1 Installing the Rack PDU Directly to a Rack Frame or Existing Mounting Bracket

Install the Rack PDU directly to the rack frame or existing mounting bracket as shown in **Figure 1**. Note that the supplied "Ground Lead Bracket" is to be placed between the PDU and the rack frame or existing mounting bracket as shown in **Figure 1**. Use the supplied 1/4-20 screws and 1/4-20 KEPS nuts.

1.2.2 Installing Rack PDUs to a Rack Frame using the Optional Mounting Bracket

If using the Rack PDU Mounting Kit, install the Rack PDU mounting bracket to the left and/or right rear frame of the rack using the appropriate hardware that fits to the cabinet that will be used.

Install the Rack PDUs to the Rack PDU mounting bracket that was previously installed on the frame as shown in **Figure 2**. Note that the supplied "Ground Lead Bracket" is to be placed between the PDU and the mounting bracket as shown in **Figure 2**.

Figure 1 Mounting Rack PDUs Directly to Rack Frame

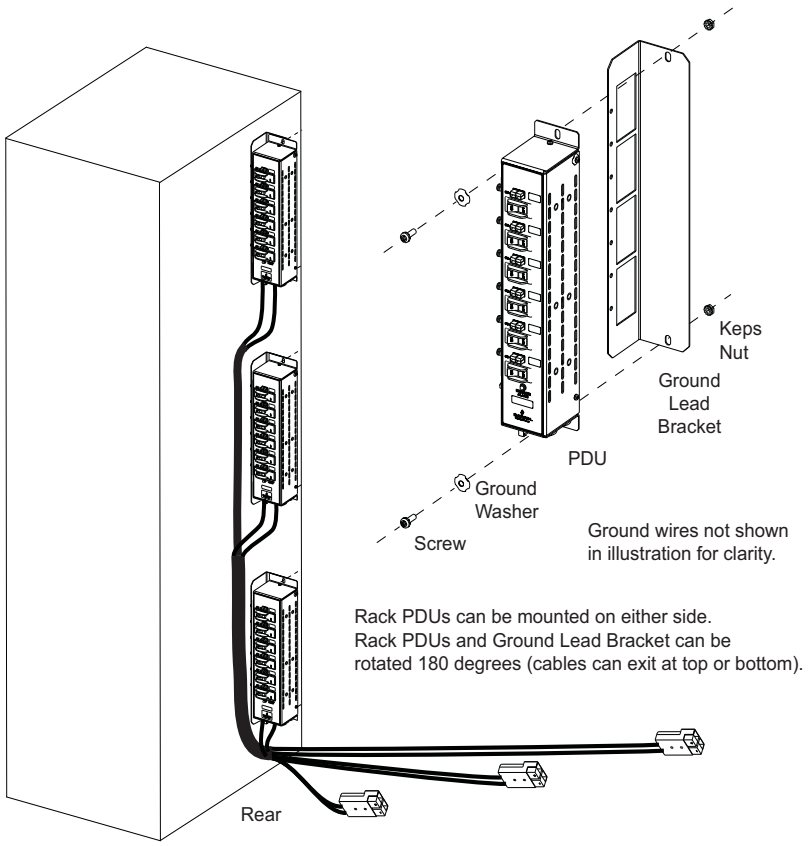
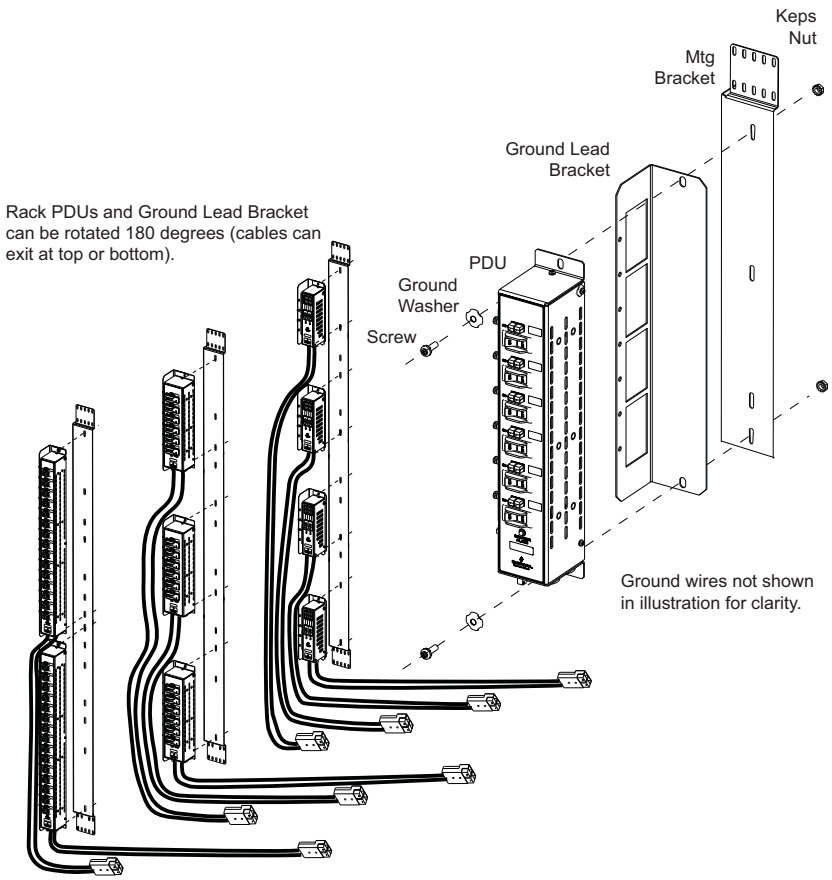


Figure 2 Mounting Rack PDUs using Optional Mounting Bracket Kit

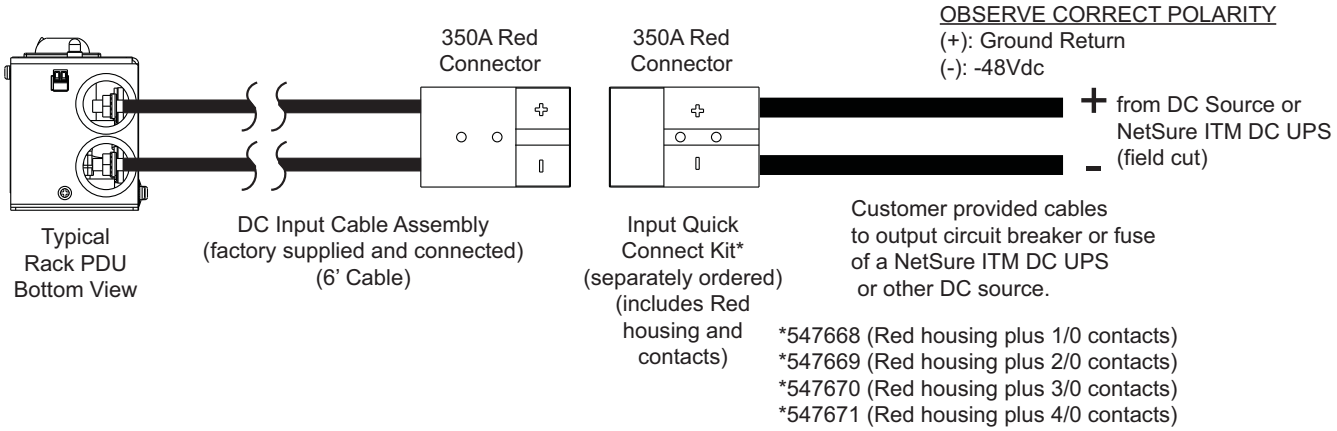


2.0 ELECTRICAL CONNECTIONS

2.1 Connecting the Rack PDU DC Input

The Rack PDU's input is designed to be fed from a 200A (max) breaker or fuse using the factory supplied and connected DC input cable assembly and the customer connected input quick connect kits. See **Figure 3**.

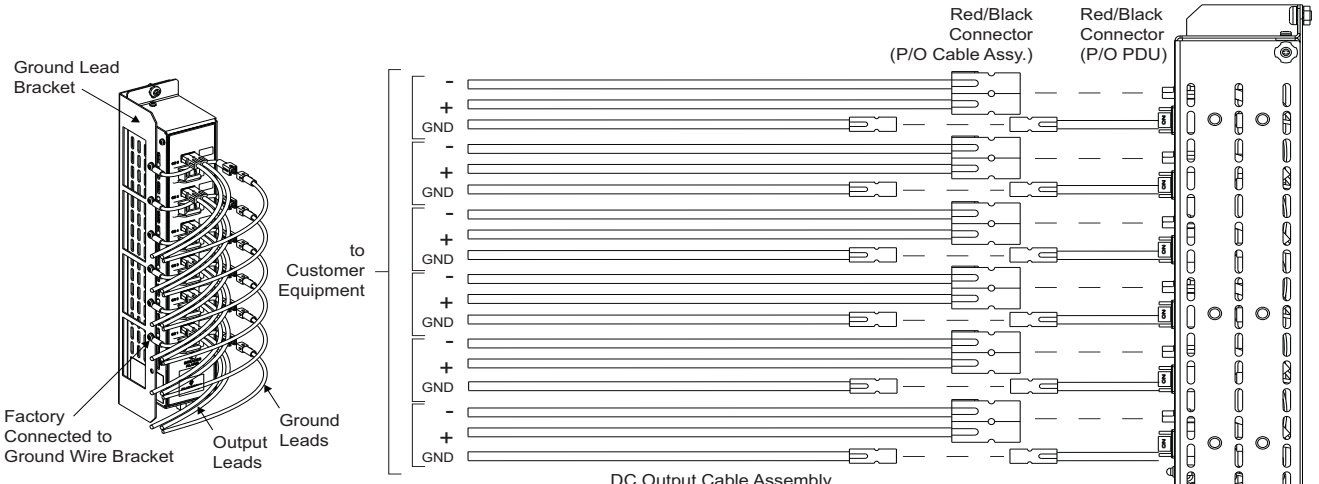
Figure 3 DC Input Connections


OBSERVE CORRECT POLARITY
(+): Ground Return
(-): -48Vdc
350A Red Connector
350A Red Connector
+ from DC Source or NetSure ITM DC UPS (field cut)
-
Typical Rack PDU Bottom View
DC Input Cable Assembly (factory supplied and connected) (6' Cable)
Input Quick Connect Kit* (separately ordered) (includes Red housing and contacts)
Customer provided cables to output circuit breaker or fuse of a NetSure ITM DC UPS or other DC source.
*547668 (Red housing plus 1/0 contacts)
*547669 (Red housing plus 2/0 contacts)
*547670 (Red housing plus 3/0 contacts)
*547671 (Red housing plus 4/0 contacts)

2.2 Connecting the Rack PDU's DC Output to Customer Equipment

The Rack PDU's output circuit breakers are connected to customer equipment via the separately ordered output cable assemblies. A ground lead is also supplied with each output cable. Each ground lead is terminated with a connector on one end (which mates with a connector on a ground wire factory connected to the "Ground Lead Bracket") and left unterminated on the other end. See **Figure 4**.

Figure 4 DC Output Connections


Ground Lead Bracket
to Customer Equipment
Factory Connected to Ground Wire Bracket
Output Leads
Ground Leads
Red/Black Connector (P/O Cable Assy.)
Red/Black Connector (P/O PDU)
- + GND
DC Output Cable Assembly (separately ordered)* (ground wires shipped loose w/ PDU's)
Typical PDU Side View

OBSERVE CORRECT POLARITY

Red Connector To Red Connector
Black Connector To Black Connector

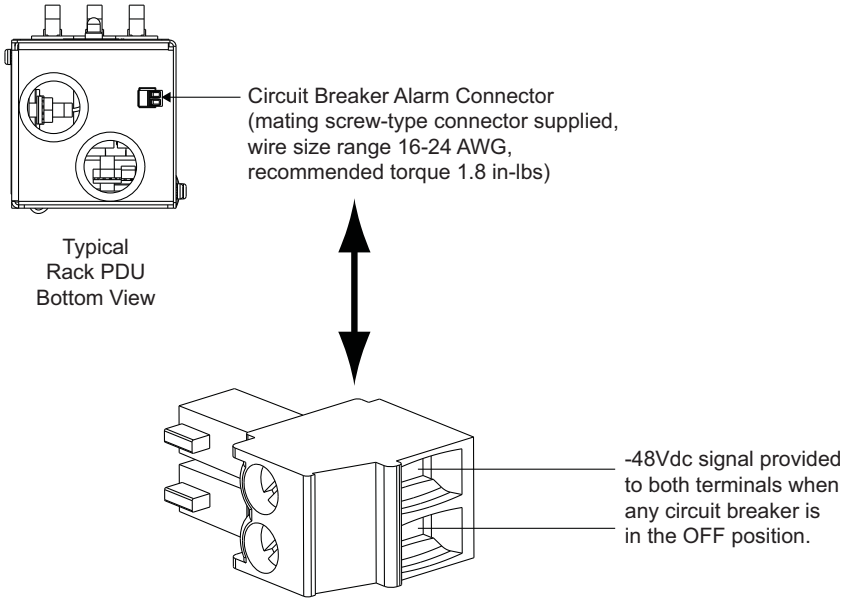
Red (-): -48Vdc
Black (+): Ground Return

PDU Model	DC Output Cable P/N*	Wire Size/Length	Connector Rating
L6	547595	10 AWG / 6'	45A
M6	547595	10 AWG / 6'	45A
L15	547595	10 AWG / 6'	45A
H2	547613	6 AWG / 4'	75A
H3	547613	6 AWG / 4'	75A
L6	555654	10 AWG / 10'	45A
M6	555654	10 AWG / 10'	45A
L15	555654	10 AWG / 10'	45A

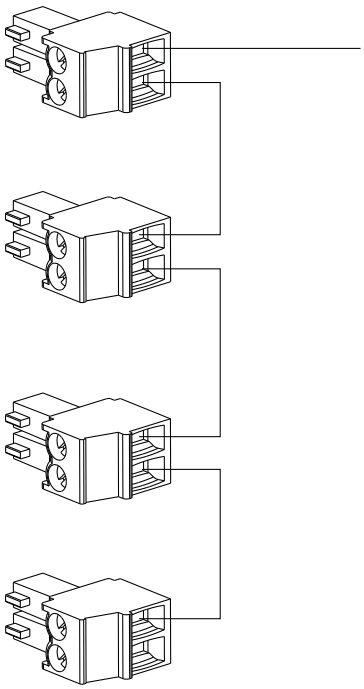
2.3 Connecting External Circuit Breaker Alarms

Negative 48Vdc is provided to a set of alarm terminals if any circuit breaker is in the OFF position. See **Figure 5**.

Figure 5 Alarm Connections



Typical interconnections when
"daisy-chaining" multiple Rack PDUs.



-48Vdc alarm signal (out)
(to ACU+ Controller in a NetSure ITM DC UPS
or Customer Monitoring Equipment)

When used with a NetSure™ ITM DC UPS, refer to Section 6040 (NetSure ITM Installation Instructions) for circuit breaker alarm connections to the ACU+ Controller.

When used with other monitoring equipment, refer to the instructions supplied with this equipment.

3.0 SPECIFICATIONS AND TECHNICAL DATA

3.1 Conformity and Standards

The NetSure RDB Rack PDU (Power Distribution Unit) has the following agency approval ratings:

- UL 60 950-1 + UL 1801 - Recognized (cURus)

3.2 Environmental Characteristics

The NetSure RDB Rack PDU (Power Distribution Unit) is designed to operate under the following environmental conditions without damage or degradation in electrical operating characteristics:

Operating Temperature	-40°F to +104°F (-40°C to +40°C) (Models L6 and L15). -40°F to +113°F (-40°C to +45°C) (Models H2, H3, and M6).
Storage Temperature	-40°F to +176°F (-40°C to +80°C).
Relative Humidity	0 to 95%, non-condensing.
Operating Elevation	6562 ft (2000m) at full power.

3.3 Specifications

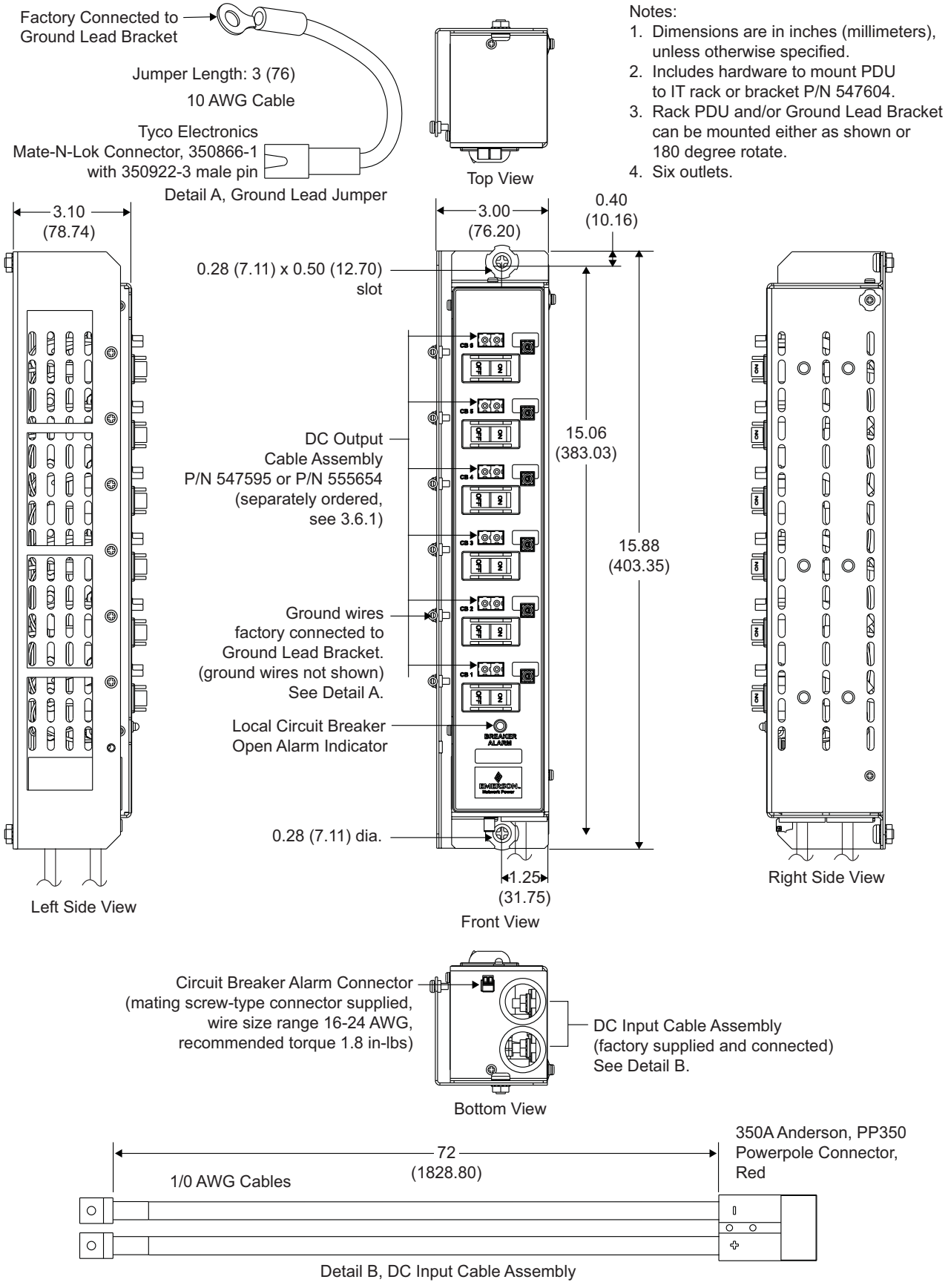
Model	Part Number	Number of Outlets	Power Rating per Outlet		Power Rating per PDU		Input/Output Voltage (nominal)
RDB - Basic Rack PDUs			**Max Watts**	**Max Amps[1]**	**Max kW**	**Max Amps[1]**	
L6	547692	6	420	10	2.5	60	-48Vdc
	547693		630	15	3.8	90	
	547499		840	20	5.0	120	
L15	547694	15	420	10	6.3	150	
	547695		630	15	8.4[2]	200[2]	
	547615		840	20	8.4[2]	200[2]	
M6	547696	6	1050	25	6.3	150	
	547697		1260	30	7.6	180	
	547503		1470	35	8.4[2]	200[2]	
H2	547500	2	3360	80	6.7	160	
H3	547698	3	2100	50	6.3	150	
	547699		2520	60	7.6	180	
	547501		2940	70	8.4[2]	200[2]	

[1] Max Amps rated at end of battery discharge (42V).

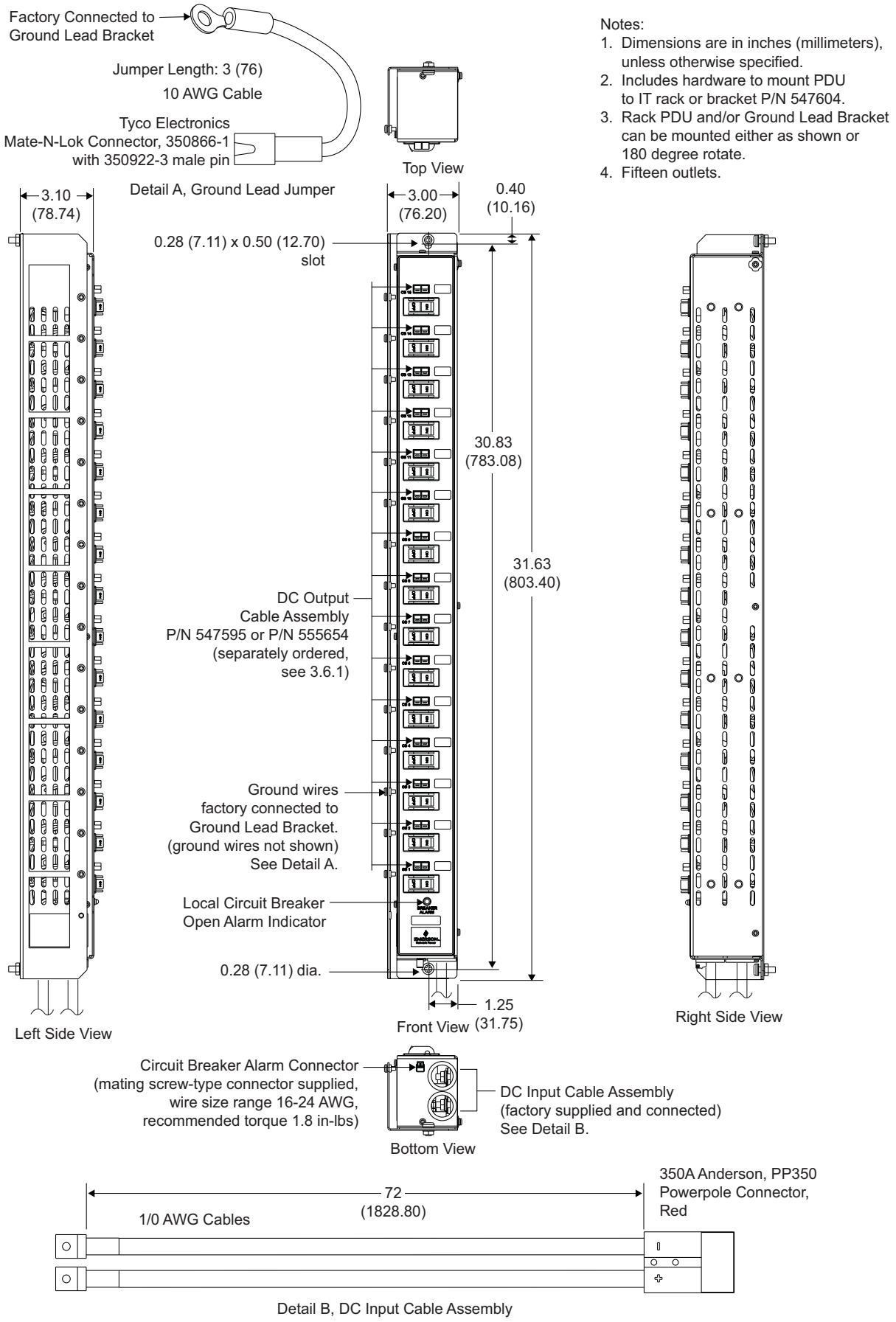
[2] PDU power rating limited to 200A, 8.4kW each.

3.4 Dimensions

3.4.1 NetSure™ RDB L6, P/Ns 547692, 547693, 547499

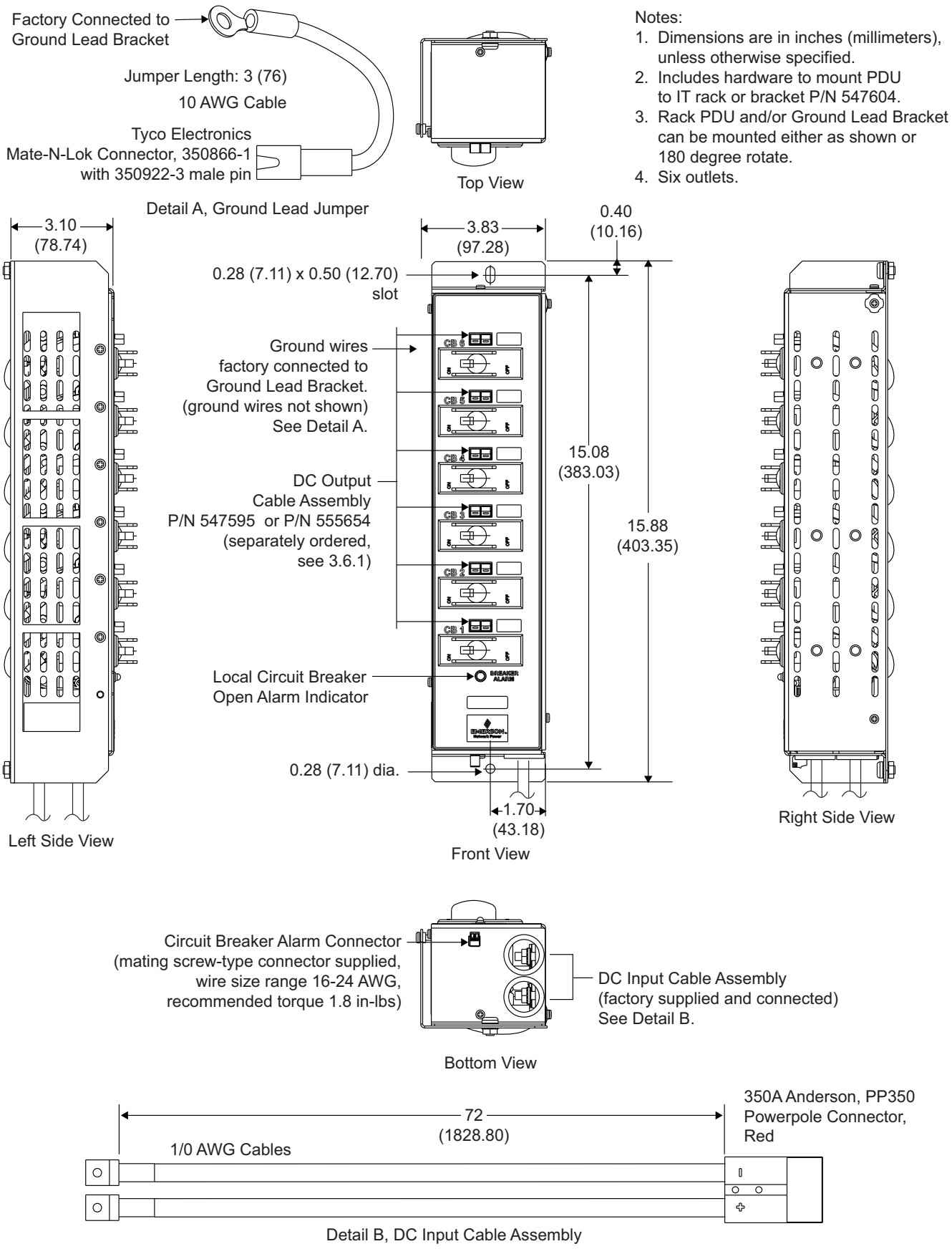

Factory Connected to Ground Lead Bracket
Jumper Length: 3 (76)
10 AWG Cable
Tyco Electronics Mate-N-Lok Connector, 350866-1 with 350922-3 male pin
Detail A, Ground Lead Jumper
Top View
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.
2. Includes hardware to mount PDU to IT rack or bracket P/N 547604.
3. Rack PDU and/or Ground Lead Bracket can be mounted either as shown or 180 degree rotate.
4. Six outlets.
3.10 (78.74)
3.00 (76.20)
0.40 (10.16)
0.28 (7.11) x 0.50 (12.70) slot
DC Output Cable Assembly P/N 547595 or P/N 555654 (separately ordered, see 3.6.1)
15.06 (383.03)
15.88 (403.35)
Ground wires factory connected to Ground Lead Bracket. (ground wires not shown) See Detail A.
Local Circuit Breader Open Alarm Indicator
0.28 (7.11) dia.
1.25 (31.75)
Left Side View
Front View
Right Side View
Circuit Breaker Alarm Connector (mating screw-type connector supplied, wire size range 16-24 AWG, recommended torque 1.8 in-lbs)
DC Input Cable Assembly (factory supplied and connected) See Detail B.
Bottom View
72 (1828.80)
1/0 AWG Cables
350A Anderson, PP350 Powerpole Connector, Red
Detail B, DC Input Cable Assembly

3.4.2 NetSure™ RDB L15, P/Ns 547694, 547695, 547615



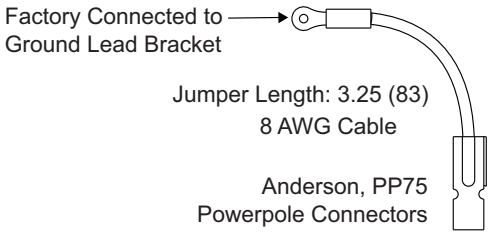
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.
2. Includes hardware to mount PDU to IT rack or bracket P/N 547604.
3. Rack PDU and/or Ground Lead Bracket can be mounted either as shown or 180 degree rotate.
4. Fifteen outlets.

3.4.3 NetSure™ RDB M6, P/Ns 547696, 547697, 547503

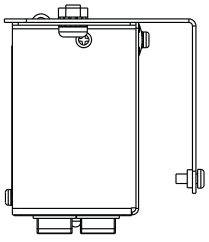

Factory Connected to Ground Lead Bracket
Jumper Length: 3 (76)
10 AWG Cable
Tyco Electronics
Mate-N-Lok Connector, 350866-1
with 350922-3 male pin
Detail A, Ground Lead Jumper
Top View
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.
2. Includes hardware to mount PDU to IT rack or bracket P/N 547604.
3. Rack PDU and/or Ground Lead Bracket can be mounted either as shown or 180 degree rotate.
4. Six outlets.
3.10 (78.74)
3.83 (97.28)
0.40 (10.16)
0.28 (7.11) x 0.50 (12.70) slot
Ground wires factory connected to Ground Lead Bracket. (ground wires not shown) See Detail A.
DC Output Cable Assembly P/N 547595 or P/N 555654 (separately ordered, see 3.6.1)
15.08 (383.03)
15.88 (403.35)
Local Circuit Breaker Open Alarm Indicator
0.28 (7.11) dia.
1.70 (43.18)
Left Side View
Front View
Right Side View
Circuit Breaker Alarm Connector (mating screw-type connector supplied, wire size range 16-24 AWG, recommended torque 1.8 in-lbs)
DC Input Cable Assembly (factory supplied and connected) See Detail B.
Bottom View
72 (1828.80)
1/0 AWG Cables
350A Anderson, PP350 Powerpole Connector, Red
Detail B, DC Input Cable Assembly

3.4.4 NetSure™ RDB H2, P/N 547500

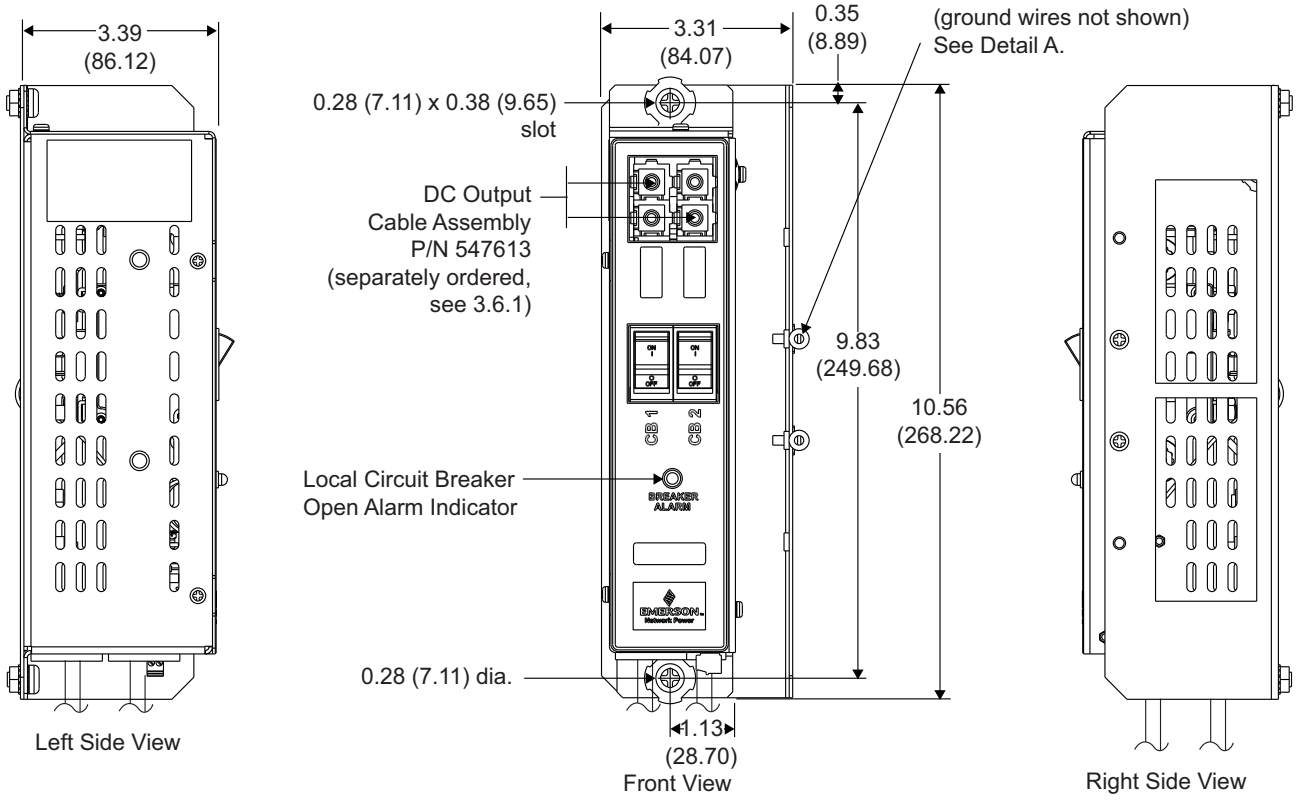
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.
2. Includes hardware to mount PDU to IT rack or bracket P/N 547604.
3. Rack PDU and/or Ground Lead Bracket can be mounted either as shown or 180 degree rotate.
4. Two outlets.



Detail A, Ground Lead Jumper



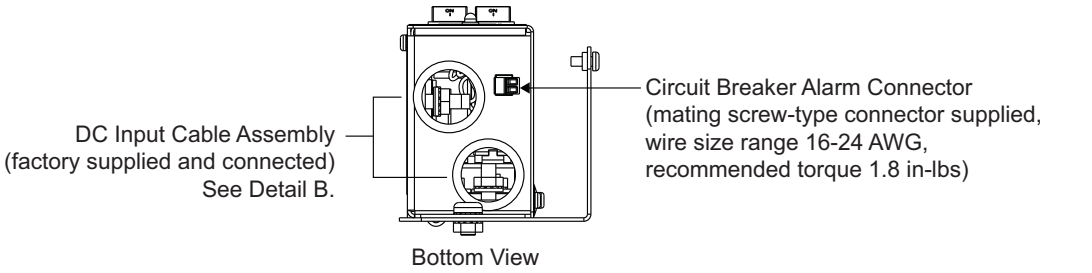
Top View



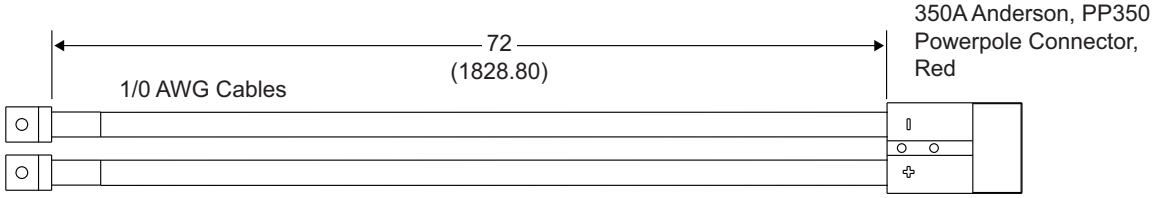
Left Side View

Front View

Right Side View


DC Input Cable Assembly
(factory supplied and connected)
See Detail B.
Circuit Breaker Alarm Connector
(mating screw-type connector supplied,
wire size range 16-24 AWG,
recommended torque 1.8 in-lbs)

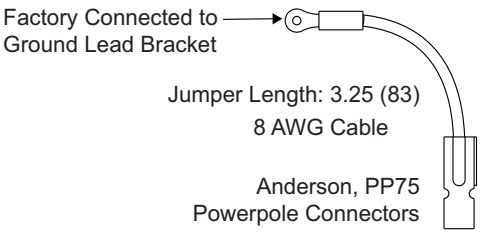
Bottom View



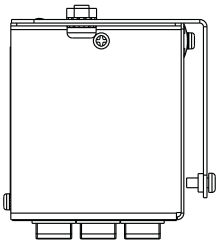
Detail B, DC Input Cable Assembly

3.4.5 NetSure™ RDB H3, P/Ns 547698, 547699, 547501

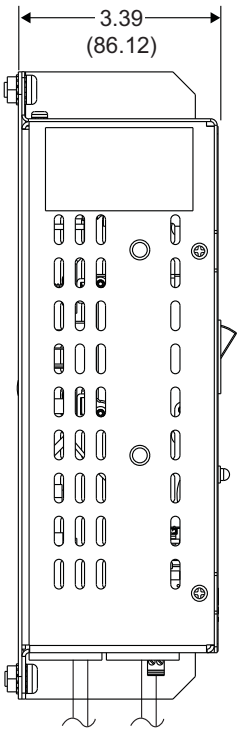
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.
2. Includes hardware to mount PDU to IT rack or bracket P/N 547604.
3. Rack PDU and/or Ground Lead Bracket can be mounted either as shown or 180 degree rotate.
4. Three outlets.



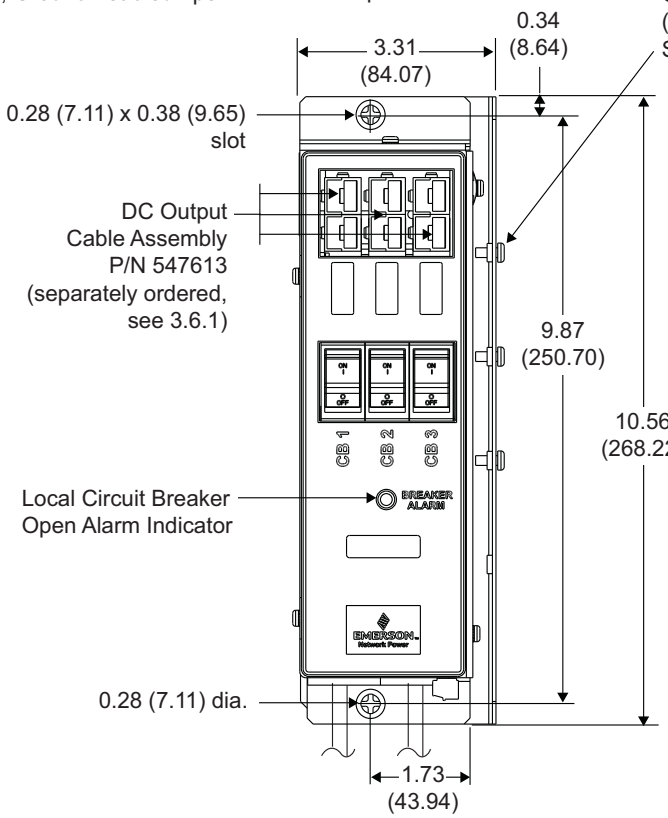
Detail A, Ground Lead Jumper



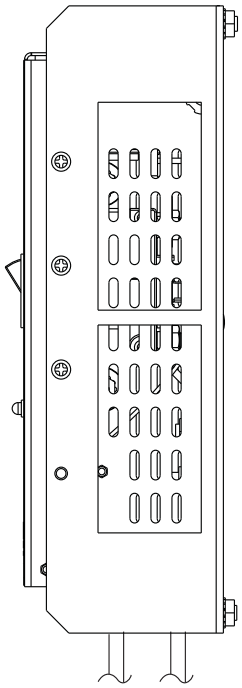
Top View



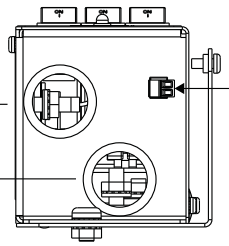
Left Side View



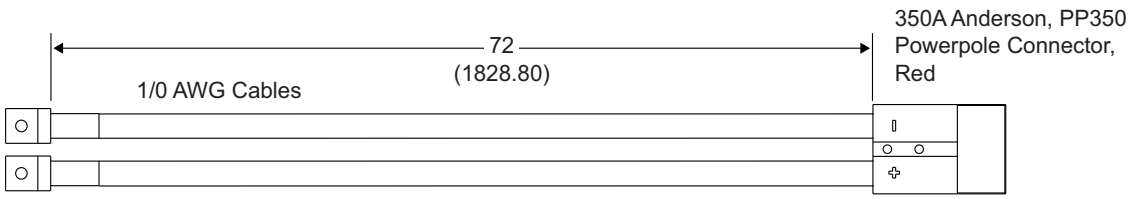
Front View



Right Side View

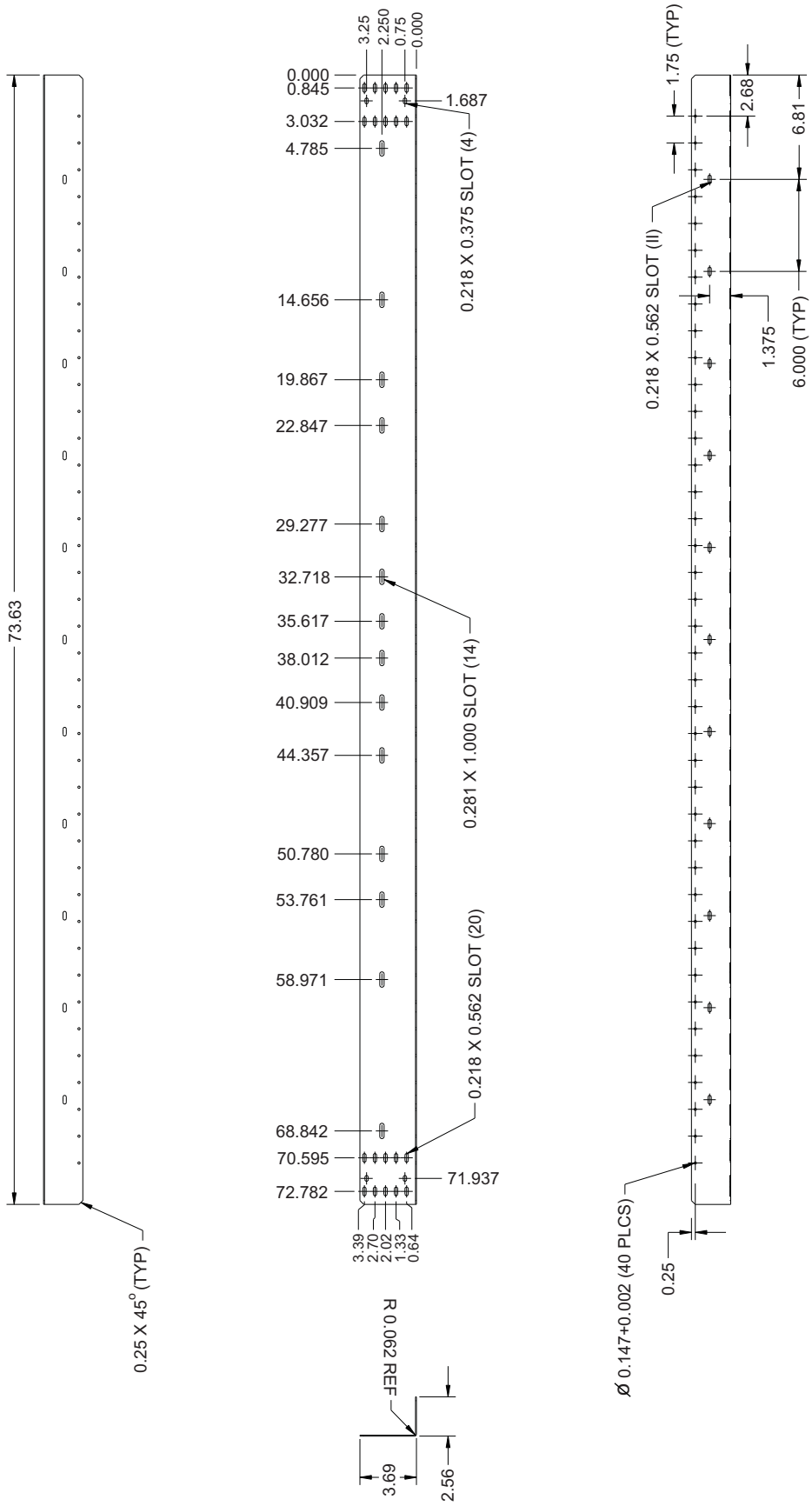

DC Input Cable Assembly (factory supplied and connected) See Detail B.
Circuit Breaker Alarm Connector (mating screw-type connector supplied, wire size range 16-24 AWG, recommended torque 1.8 in-lbs)

Bottom View



Detail B, DC Input Cable Assembly

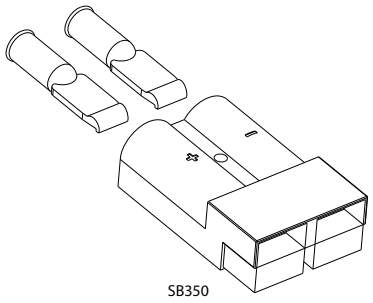
3.4.6 NetSure™ RDB Mounting Bracket, P/N 547665



3.5 Input Quick Connect Kit

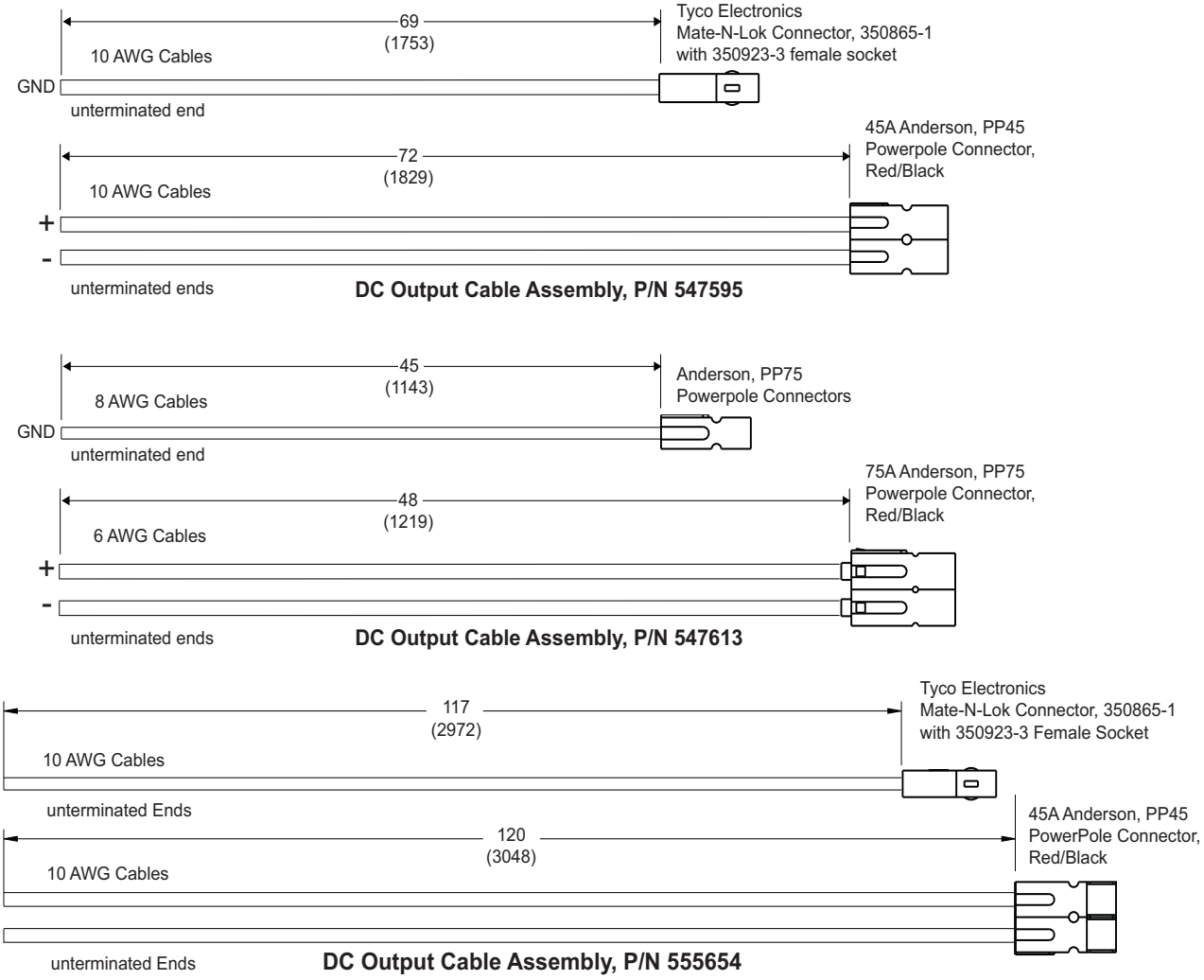
Provides the mating connector and contacts for the DC Input Cable Assembly factory supplied and connected to the Rack PDU.

P/N	Contact Size (AWG)	Mating Anderson Powerpole Connector
547668	1/0	350A, Red (SB350)
547669	2/0	
547670	3/0	
547671	4/0	



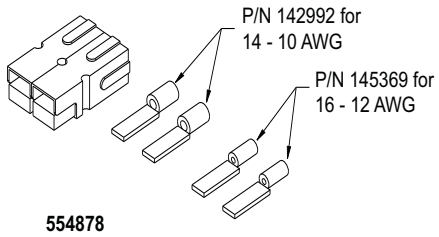
3.6 Output Cable Assemblies

3.6.1 P/N 547595, P/N 547613 and P/N 555654



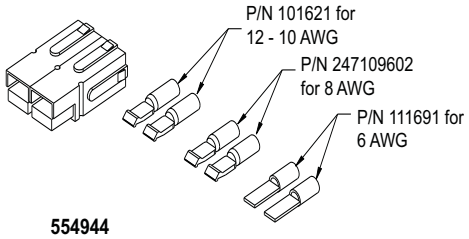
Notes:
1. Dimensions are in inches (millimeters), unless otherwise specified.

3.6.2 Output Connector Kits (P/N 554878 and P/N 554944)



554878

For use with L6, L15 and M6 RDB
Includes red and black connector housings and contacts for 10-14 AWG, and 12-16 AWG wire sizes.



554944

For use with H2 and H3 RDB
Includes red and black connector housings and contacts for 6 AWG, 8 AWG and 10-12 AWG wire sizes.

3.7 Replacement Circuit Breakers

NetSure Rack PDU P/N	Replacement Circuit Breakers P/N
547692 547694	142907 (10A)
547693 547695	142908 (15A)
547499 547615	141801 (20A)
547696	143041 (25A)
547697	143042 (30A)
547503	141802 (35A)
547698	142951 (50A)
547699	142952 (60A)
547501	142953 (70A)
547500	142955 (80A)

4.0 OPERATION

WARNING

Improper operation may cause overheating and lead to increased fire hazard. Improper operation may also destroy the device and damage other connected systems.

Make sure that the total input current of the connected systems does not exceed the current rating specified on the rating plate of the Rack PDU. Please refer to the operating instructions or the rating plates of the connected systems or the circuit breaker for power specifications.

4.1 Connecting Power to the Loads

To connect DC power to the load(s), operate the respective circuit breaker on the Rack PDU to the ON position.

4.2 Removing Power from the Loads

To disconnect DC power from the load(s), operate the respective circuit breaker on the Rack PDU to the OFF position.

4.3 Alarms

4.3.1 Local Alarm Indicator

Each Rack PDU contains a circuit breaker alarm indicator. This indicator illuminates Red if any circuit breaker on the Rack PDU is in the OFF position.

4.3.2 External Circuit Breaker Alarm

Negative 48Vdc is supplied to a set of terminals when any circuit breaker on the Rack PDU is in the OFF position. These terminals may be connected to customer external alarm circuits.

5.0 REVISION RECORD

Issue	Change Number (ECO)	Description of Change
AA	LLP214446	New
AB	LLP214895	Table in 3.3 revised. Manufacturer P/Ns added to 3.5 and 3.6.
AC	LLP215438	Updated circuit breaker part number on the DC power strips and changed hardware stack-up on the PDU.
AD	LLP215960	Updated orientation of Snap-Pak breakers and it's connections to the following assembly: 547499, 547692, 547693, 547615, 547694 and 547695. Added insulator for wire connection for assembly: 547500 547501 547698 and 547699. Updated reference about rack PDU mounting kit, rack PDU mounting bracket and rack PDU mounting bracket dimensions. Updated RDB ground connections for 547499, 547503, 547615 and 547595.
AE	LLP217560	Update the size of ground lead jumper used for 547500,547698,547699, 547501 and update the length of ground lead jumper. Update the size of ground wire used for 547613. Add connector kit information for 554878 and 554944.
AF	LLP217939	Add part number 555654 DC output cable assembly. Add labels to output connector kits.
AG	LLP218160	UPdated DC output connector color.

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Phone	1.800.800.1280, option 5	

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